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VARIATIONS IN *HETERODON CONTORTRIX* IN MASSACHUSETTS

While identifying a collection of snakes from the vicinity of Northampton, I noticed that one young specimen of *Heterodon contortrix* differed from the description of that species in Blanchard's "Key to the Snakes of the United States, Canada and Lower California" in having the prefrontals completely separated by the azygous plate. To determine whether this variation was constant in the specimens collected in and near this locality, and to discover whether other local variations occurred, I examined all the specimens of *Heterodon contortrix* that I could obtain from Massachusetts, viz. 2 from Mt. Toby, 4 from Williamsburg, 1 from Hadley, 1 from W. Springfield, 1 from Petersham, and 7 from Wareham, with the following results.

Variation in the prefrontals: Specimen No. 2, from Mt. Toby (the specimen in which this peculiarity was first noted), and No. 5 from Williamsburg, had the prefrontals completely separated by the azygous plate. In all other specimens the prefrontals were in contact.

Variation in the number of caudal plates: The Mt. Toby, Williamsburg, Hadley, and W. Springfield specimens had fewer caudal plates (41-43) than the Wareham and Petersham specimens (44-54).

Variation in color: All the specimens from Wareham were greyish brown with a pattern of pale grey spots dorsally. The ventral surface was pale anteriorly, darkening posteriorly to black, with the ventral surface of the tail noticeably lighter than that of the body. Specimens 10948, from Petersham, and 46, from W. Springfield, were similar to the Wareham specimens in color and pattern, though slightly darker, and with the ventral surface of the tail not conspicuously lighter than that of the body. The remaining specimens were uniformly dark brown dorsally, with the exception of specimen 4, which was very dark brown, but spotted, and two very young specimens, 2 and 7, which were dark brown with lighter spots. None of these, excepting 2 and 7, had the under side of the tail lighter than the abdomen, but were uniformly grey ventrally. The number of dorsal spots, when present, was:

38	in the	Mt. Toby	specimen No.	2
40	"	Williamsburg	"	4
40	"	Hadley	"	7
41	"	W. Springfield	"	46
43	"	Petersham	"	10948

42–49 in the Wareham specimens.

In color and the number of dorsal spots the W. Springfield and Petersham specimens may be considered as intermediate between the Mt. Toby, Williamsburg, and Hadley specimens and the Wareham, or typical specimens. The melanism in the northern form is similar to that occurring in *Elaphe obsoleta*. In that species, also, the adults of the northern form, *Elaphe obsoleta obsoleta*, are black, while those of the southern form, *Elaphe obsoleta confinis*, are spotted throughout life.

Conclusions: The specimens from Mt. Toby, Williamsburg and Hadley represent the most northern range of the genus *Heterodon*. These snakes have a larger azygous plate than the typical *Heterodon contortrix*, while *Heterodon browni* Stejneger, the most southern form, has no azygous plate, representing the extrme other end of the series. These snakes differ from the typical *Heterodon contortrix* also in the color of the adults, the number of dorsal spots and the number of caudal plates.

	Specimen	Locality	Scale rows	Ventrals	Caudals	Labials sup.	Labials inf.	Oculars	Temporal
S.C.	1	Mt. Toby	25-23-19	128	43	8	10	11-10	4,5
"	2	"	"	132	42	8	10	11-10	3,3 3,4
"	3	Williamsburg	"	131	43	8	10	9-10	4,3 4,4
"	4	"	"	130	42	8	10	11-10	3,4
"	5	"	"	133	41	8	10	11-11	5,4 3,3
"	6	"	"	132	43	8	11	11-10	3,6 4,5
"	7	Northampton	"	134	42	8	11	11-11	4,5 3,4
M.C.Z.	10948	Petersham	"	127	44	8	11	9-10	4,5 4,4
"	8049	Wareham	"	120	47	8	10	11-10	4,4 3,4
"	8048	"	"	122	50	8	10	10-10	3,4
"	8250	"	"	130	(tail broken)	7/8	10	9-11	4,4 3,4
"	8251	"	"	137	46	8	11/10	10-11	2,4 3,4
"	8050	"	"	133	44	8	10	8-9	3,3
"	7018	"	"	.	54	8	11	11-10	3,4
"	8252	"	"	130	45	8	10	10-10	3,4
Spg.	46	W. Springfield	"	131	41	8	11	10-8	3,4

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LIST OF THE AMPHIBIANS AND REPTILES OF WORDEN TOWNSHIP, CLARK COUNTY, WISCONSIN

During the past ten years I have collected a considerable number of amphibians and reptiles in Worden Township, north-west corner of Clark County, Wisconsin. Specimens of most of the species observed

have been deposited in the American Museum of Natural History, or in Field Museum of Natural History. The complete list of species observed is as follows:

Salamanders—

1. *Ambystoma maculatum* (Shaw)
2. *Plethodon cinereus* (Green)

Frogs and Toads—

3. *Bufo americanus* Holbrook
4. *Hyla crucifer* Wied
5. *Hyla versicolor versicolor* (Le Conte)
6. *Pseudacris triseriata* (Wied)
7. *Rana cantabrigensis* Baird
8. *Rana clamitans* Latreille
9. *Rana pipiens* Schreber

Turtles—

10. *Chelydra serpentina* (Linné)
11. *Chrysemys bellii bellii* (Gray)

Snakes—

12. *Thamnophis sirtalis sirtalis* (Linné)
13. *Storeria occipito-maculata* (Storer)
14. *Diadophis punctatus edwardsii* (Merrem)
15. *Liopeltis vernalis* (Harlan)
16. *Heterodon contortrix* (Linné)
17. *Elaphe vulpina* (Baird and Girard)

Several species not represented on this list have been collected in Chippewa County, the adjacent county to the west. These are:

1. *Rana palustris* Le Conte. Mouth of the Yellow River, Lake Wissota, Anson Tp.
2. *Amyda spinifera* (Le Sueur). Same locality.
3. *Eumeces septentrionalis* (Baird). Collected near Chippewa Falls, by W. E. Slagg.

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SPECIES OF LAND TORTOISES OF THE GENUS *TESTUDO* FOUND IN THE COUNTRIES BORDERING THE MEDITERRANEAN SEA

	Specimens	Specific names used by Boulenger, Brit. Mus. Cat. Chelonians, 1889.	Forms known (subspecies or geographical races)	Geographical range.	Distribution			Scales on front of arm, number of longitudinal series.	Spur on back of thigh.	Tail ending in a claw.	Approx. max. length (in str. line of carapace) in cm.	General color of carapace.
					Europe	Asia	Africa					
1.	*T. graeca* Linnaeus 1758	*ibera* p. 176	4 or more	very wide	×	×	×	4 to 6	Yes	No	27	pale yellow to black, according to race.
2.	*T. hermanni* Schneider 1783	*graeca* p. 177	2	wide	×	.	—	7 to 10	No	Yes	25	Yellow, with conspicuous black markings.
3.	*T. marginata* Schoepff 1792	*marginata* p. 174	1	restricted	×	—	—	4 or 5	No	Yes	34	Black, with a yellow spot on each shield.
4.	*T. leithii* Gunther 1869	*leithii* p. 175	1	very restricted	—	×	×	3	No	No	12	Pale yellow, with narrow dark edges to shields.

There are other differences between these four species, but the above table gives the most conspicuous differences at a glance.

This table is according to my present knowledge. I shall always be glad to see more specimens.

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FOOD OF *TANTILLA NIGRICEPS* KENNICOTT

A four and one-half inch specimen of this species taken in Tempe, Arizona, in September 1925, and sent alive to Iowa State College voided feces which showed remains of the legs of a small spider. These fragments were mounted and sent to Dr. C. R. Crosby of Cornell University who has identified as probably those of a young tarantula. Since it has been under observation here it has followed an Attid spider around in its cage but has not been seen to attempt to capture it.

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THE "BUCCAL BROODING HABITS" OF THE AFRICAN TREE FROG *LEPTOPELIS BREVIROSTRIS*

In 1906, Boulenger (Proc. Zool. Soc., London, p. 179), reported that the female *Leptopelis brevirostris* broods her eggs in her mouth. This statement was based on the discovery of eggs in the mouth of a single specimen of this species sent to the British Museum by Mr. G. L. Bates from the Camerouns. No subsequent observation ever confirmed this conclusion, but the "buccal brooding habits" of *L. brevirostris* is usually accepted in the literature as a fact.

While recently studying the Amphibia in the British Museum, I examined, thanks to the kindness of Mr. H. W. Parker, the entire series of this species in the Museum and found the specimen described by Boulenger. Its mouth had not been opened, but the median portion of the lower jaw was broken in such a way that one could plainly see several large eggs within the mouth. I carefully cut the muscles at the angles of the jaw and opened the mouth. To my surprise the specimen contained no tongue nor mucous covering to either the floor or roof of the mouth. A binocular examination of the eggs revealed that they were ovarian for they were covered by a peritoneal membrane and were interspaced with small eggs. A dissection of the abdomen revealed that the specimen had been almost completely eviscerated through its mouth and contained neither heart, lungs, liver, stomach, nor small intestine. Only the ovaries, oviducts, rectum, a short piece of the intestine and the kidneys were present. Obviously, some person (presumably a native hunter) had seized the everted stomach of the living frog and had pulled out the greater part of the animal's viscera through its mouth. The eggs which Boulenger had seen in the mouth of the preserved specimen were merely the anterior

part of the ovaries protruding through the great gap which had been left in the throat of the frog. These ovarian eggs were four mm. in diameter and unpigmented. It is possible that *L. brevirostris* may have a specialized life history, but there is no evidence that buccal brooding is practiced by this or any other amphibian.[1]

1. In Rhinoderma the vocal sack of the male functions as a receptacle for the eggs.

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THE STATUS OF *SIREDON GRACILIS* BAIRD

I have recently, thanks to the kindness of my friend Chester B. Duryea, been able to compare an authentic larva of *Ambystoma paroticum* Baird 1867, with the type of *Siredon gracilis* Baird 1857.

The latter, U.S.N.M., No. 4080, came from the Cascade Mts. in latitude 44 degrees, and hence in Oregon. The former came from Mt. Rainier, Washington, altitude 5200 ft., and was accompanied by an adult which was caught at the same time as a larva, but had transformed in an aquarium, while the larval companion was almost immediately preserved. Thus my specimen is assuredly a larva of *paroticum*.

Both my larva and the type of *gracilis* agree in having 3 phalanges in the fourth toe; 11 costal grooves; gills with long rami; marked parotoid glands; similar coloration; low dorsal fin; no palmar or plantar tubercles. There is a slight difference in the relative lengths of fingers and toes, but these differ as much between the two sides of the type.

Aside from these comparisons *gracilis* is the same as *paroticum* (as I suggested in a note in Stejneger and Barbour, Check List (2), p. 6, 1923), because *tigrinum* is eliminated from consideration by lack of

plantar tubercles; presence of parotoid glands; low dorsal fin; 3 phalanges in the fourth toe. *Dicamptodon* and *Rhyacotriton* are immediately eliminated by the gills with long rami, and presence of a dorsal fin. These are the only other ambystomid salamanders having at all the same range.

Storer (1925, U. Cal. Publ. Zool. 27, p. 75), has objected to my preliminary assignment of this larva, his objections being based on discrepancies between the original figure and the larva of *paroticum*. Actual comparison with the type, is, I think, more than sufficient to outweigh such considerations, and the animal should be known as *Ambystoma gracile* (Baird).

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